and further wherein computing a value of $\log(x)$ for the binary floating point representation of the particular number $x$ comprises the steps of:

partitioning a mantissa $m$ of a binary representation of $x$ in a memory, the representation of $x$ including a binary exponent $e$ and the binary mantissa $m$, wherein a first, most significant part of the partition corresponds to a region $i$ and a second, less significant part of the partition corresponds to a region $\Delta x$, where $\Delta x$ is a distance from mantissa $m$ to reference point $a_i = 1 + \frac{i + 0.5}{N}$; and

computing an approximation to $\log(x)$, using a polynomial of first degree in $m$ and a precomputed value of $\log(a_i)$.

5. (once amended) A method in accordance with Claim 32 further comprising the steps of precomputing a value for log(2), and, for each $i$, precomputing each value of $b_i$ and $c_i$.

8. (once amended) A method in accordance with Claim 31 utilized in a computed tomography (CT) scanner for generating an image of an object from acquired projection data of the object.

13. (once amended) A method in accordance with Claim 33 further comprising the steps of precomputing a value for log(2), and, for each $i$, precomputing each value of $b_i$ and $c_i$.

19. (once amended) A computing device in accordance with Claim 33 further configured to precompute a value for log(2), and, for each $i$, to precompute each value of $b_i$ and $c_i$.

27. (once amended) A computing device in accordance with Claim 34 further configured to precompute a value for log(2), and, for each $i$, to precompute each value of $b_i$ and $c_i$.

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29. (once amended) A method in accordance with Claim 31 further comprising using the approximation to process at least one image of an object of interest.

PLEASE ADD THE FOLLOWING NEW CLAIMS:

31. A method for computing an approximation of a natural logarithm function comprising the steps of:

partitioning a mantissa region between 1 and 2 into $N$ equally spaced sub-regions;

precomputing centerpoints $a_i$ of each of the $N$ equally spaced sub-regions, where $i = 0,\ldots,N-1$;

selecting $N$ sufficiently large so that, for each sub-region, a first degree polynomial in $m$ computes $\log(m)$ to within a preselected degree of accuracy for any $m$ within the sub-region, where $m$ is a binary mantissa of a binary floating point representation of a number; and

computing a value of $\log(x)$ for a binary floating point representation of a particular number $x$ stored in a memory of a computing device utilizing the first degree polynomial in $m$.

32. A method in accordance with Claim 2 wherein computing an approximation to $\log(x)$ comprises the step of computing an approximation written as:

$$y = -\log(x) \approx b_i + c_i \Delta x + e \times \log(2)$$

for $i = 0,\ldots,N-1$

where:

$$b_i = -\log(a_i) + \left(\frac{1}{4a_iN}\right)^2 - \left(1+\frac{1}{2N}\right)\frac{1}{a_i}; \text{ and}$$

$$c_i = -1/a_i.$$

33. A method in accordance with Claim 10 wherein computing an approximation to log($x$) comprises the step of computing an approximation written as:

$$y = -\log(x) \approx b_i + c_i\Delta x + e \times \log(2)$$

for $i = 0,\ldots,N-1$

where:

$$b_i = -\log(a_i) + \left(\frac{1}{4a_iN}\right)^2 - \left(1+\frac{1}{2N}\right)\frac{1}{a_i}; \text{ and}$$

$$c_i = -1/a_i.$$

34. A computing device in accordance with Claim 16 wherein said device being configured to compute an approximation to log($x$) comprises said device being configured to compute an approximation written as:

$$y = -\log(x) \approx b_i + c_i\Delta x + e \times \log(2)$$

for $i = 0,\ldots,N-1$

where:

$$b_i = -\log(a_i) + \left(\frac{1}{4a_iN}\right)^2 - \left(1+\frac{1}{2N}\right)\frac{1}{a_i}; \text{ and}$$

$$c_i = -1/a_i.$$

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35. A computing device in accordance with Claim 24 wherein said device being configured to compute an approximation to log($x$) comprises said device being configured to compute an approximation written as:

$$y = -\log(x) \approx b_i + c_i \Delta x + e \times \log(2)$$

for $i = 0,\ldots,N-1$

where:

$$b_i = -\log(a_i) + \left(\frac{1}{4a_i N}\right)^2 - \left(1 + \frac{1}{2N}\right)\frac{1}{a_i}; \text{ and}$$

$$c_i = -1/a_i.$$

**Remarks**

The Office Action mailed February 12, 2003 has been carefully reviewed and the foregoing amendment has been made in consequence thereof. Submitted herewith is a Submission of Marked Up Claims.

In accordance with 37 C.F.R. 1.136(a), a two-month extension of time is submitted herewith to extend the due date of the response to the Office Action dated February 12, 2003, for the above-identified patent application from March 12, 2003, through and including May 12, 2003. In accordance with 37 C.F.R. 1.17(a)(2), authorization to charge a deposit account in the amount of $410.00 to cover this extension of time request also is submitted herewith.

Claims 2-3, 5-11, 13-17, 19-25, and 27-35 are now pending in this application. Claims 1-28 stand rejected. Claims 1, 4, 12, 18 and 26 have been cancelled due to typographical errors and rewritten as new Claims 31-35 respectively. Accordingly, all arguments made with respect